WILDCAT WIND FARM I
REVENUE BENEFITS FOR MADISON COUNTY

1. *Estimated Additional Property Tax Revenues* — *$ 22.5 Million*

- Estimated Property Tax Revenue (2014-2024) — $5,440,000
- Estimated Annual Property Tax Revenue (2024 and beyond) — $750,000-$1,000,000
- **15-year total** — $9,000,000- $10,000,000
- **30-year total** — **$20,000,000-25,000,000**

Estimated 15-year Property Tax Revenue to Taxing Districts within Project Area

Taxing District	Approximate Proportion of Local Tax Revenue	Approximate 15-Year Total
Madison Grant School District	38%	**$3,500,000**
Elwood School District	9%	**$800,000**
County (excl. Bridges)	31%	**$2,900,000**
Bridges	1.5%	**$140,000**
Duck Creek Township	12%	**$1,100,000**
Boone Township	0.3%	**$24,000**
Pipe Creek Township	0.3%	**$26,000**
Library	7%	**$700,000**
Solid Waste	0.4%	**$35,000**

2. *Landowner Royalties* — *$500,000-750,000/year*

- **30-year total estimate, assumes 2% annual increase in price of power** — ***$22-28 Million***

3. *Economic Development Donations* — ***$1.2 Million***

To be used to stimulate further economic development in the County.

4. *Permit Fees* — ***$180,000***

5. *Estimated Road Upgrade/Rebuild Investment* — ***$3 Million - $6 Million***

Upgrades will be made to County and Township roads within the Project Area used during the construction process. Post construction, these roads will be restored to the same or in nearly all cases better than original condition. This range is typical of E.ON's experience in the Midwest

TOTAL DIRECT ECONOMIC BENEFIT: $48,000,000 to $60,000,000

To: Madison County Commissioners and Planning Commission
From: E.ON Climate & Renewables
Subject: Wildcat Wind Farm I - Summary of Potential Economic Impacts on Madison County
Date: May 2, 2011

E.ON Climate & Renewables (EC&R) evaluated the economic impacts of constructing and operating the proposed *Wildcat Wind Farm I* project in Madison and Tipton Counties. Total investment in the wind farm will be approximately $350-400 million, half of which will be in the Madison County portion of the project. The project is expected to be constructed over an 8-12 month period beginning in early 2012. This analysis concludes that the project will result in a positive economic impact to the County, including the creation of jobs as well as an increase in local spending. The project will also confer land lease payments to participating landowners.

The analysis is based on reasonable assumptions of future expenditure patterns for constructing and operating the proposed wind farm. Findings should not be taken as precise projections of future performance, but rather provide insight into the likely economic impact of the project. Economic impacts were estimated using an input-output model designed by the U.S. Department of Energy, National Renewable Energy Laboratory (NREL) called the Jobs and Economic Impact (JEDI) model, which estimates the economic impacts of constructing and operating power generation facilities. Demographic and project specific data for Madison County was used to further refine results. A detailed description of the JEDI model can be found at http://www.nrel.gov/analysis/jedi/about_jedi.html.

Summary of Economic Impact

Wind farms and other economic investments that bring new dollars and jobs to a locale and are measured using three components of economic impact: *direct, indirect* and *induced impacts,* which are described below:

Direct impacts are *immediate, project development and onsite labor impacts* created by expenditures that are directly applied to the project and include expenditures on engineers, project developers, construction crews, road builders, turbine erection crews, crane operators, etc.

Indirect impacts, or *secondary supply chain impacts*, are generated by expenditures on equipment, materials and services for the construction or subsequent operation of the wind farm though spending on those supportive businesses. Examples include concrete manufacturers, equipment, spare parts, transportation, and also professional services.

Induced impacts reflect *overall increases in household spending*, as income increases due to additional economic activity created by the project. Induced impacts result when people spend money for their personal needs, not project needs, such as food, clothing, housing, day care, medical care and insurance.

For the purpose of this analysis, the term "job" is classified as one full-time equivalent (FTE) job. One FTE is equal to one person working full-time for one year, or 2,080 working hours (52 weeks, 40 hours per week).

Local Economic Impact: Construction Phase

Jobs, wages, and salaries. As shown in *Table 1*, the project is projected to create approximately 30-60 jobs through the direct impacts associated with the project, generating approximately $3 million in earnings. This estimate represents the estimated number of local jobs directly involved in the project construction. The indirect impacts of the project are projected to create another 150-200 jobs, generating approximately $12 million in earnings. Induced impacts are projected to generate another 30-100 jobs and approximately $3.5 million in earnings.

Local expenditures. The direct impacts of the project are limited to on-site project costs, and are projected to generate approximately $200,000 in local spending in Madison County during the construction phase of the project. The majority of local spending that is projected to occur during the construction phase will occur as a result of the indirect impacts of the project. It is projected that the proposed wind farm will generate approximately $29 million in

local expenditures as a result of the indirect impacts of the project. The induced impacts associated with the project are projected to generate approximately $7 million in local expenditures.

In all, the total estimated economic impact of jobs, earnings and local expenditures is anticipated to have a combined *total local benefit* to Madison County of approximately $54.7 million during the 8-12 month construction phase of the project and create approximately 200-360 jobs.

Figure 1: Estimated Benefits to Madison County during Construction Phase

Impact Type	Approximate Jobs (FTE)	Wages and Salaries	Local Expenditures	Total Local Benefit
Direct Impacts	~ 30-60	~ $3,000,000	~ $200,000	~ $3,200,000
Indirect Impacts	~ 150-200	~ $12,000,000	~ $29,000,000	~ $41,000,000
Induced Impacts	~ 30-100	~ $3,500,000	~ $7,000,000	~ $10,500,000
Total Impacts	**~ 200-360**	**~ $18,500,000**	**~ $36,200,000**	**~ $54,700,000**

Source: JEDI Wind. Note: Amounts rounded to the nearest hundred thousand dollars.

Local Economic Impact: Operations and Management Phase

Jobs, wages, and salaries. The direct impacts associated with the project are projected to create approximately 4-6 jobs in Madison County, generating approximately $250,000 annually in earnings. This includes jobs that are directly involved with the ongoing operations of the project. Another 8-10 jobs are projected to be generated by the indirect impacts of the project, generating a total of approximately $400,000 in wages and salaries annually. Induced impacts associated with the project are projected to create an additional 8-10 jobs in Madison County, generating approximately $400,000 in earnings.

Local expenditures. The direct impacts of the project are limited to on-site project costs, and are projected to generate approximately $50,000 annually in local spending. The majority of spending projected to occur within Madison County during the operations phase of the project will occur as a result of the indirect impacts of the project. It is projected that each year the proposed wind farm is in operation, approximately $2.6 million on local expenditures will be generated as a result of the indirect impacts associated with the project. Induced impacts are projected to generate another $800,000 each year in local spending.

As summarized in *Figure 2,* the total estimated economic impact of jobs, earnings and local expenditures is anticipated to have a combined *total local benefit* to Madison County of approximately $4.6 million annually during the ongoing operations of the project, and is expected to create approximately 20-26 jobs.

Figure 2: Estimated Annual Benefits to Madison County during Operations Phase

Impact Type	Approximate Jobs (FTE)	Wages and Salaries	Local Expenditures	Total Local Benefit
Direct Impacts	~ 4-6	~ $250,000	~ $50,000	~$300,000
Indirect Impacts	~ 8-10	~ $400,000	~ $2,600,000	~$3,100,000
Induced Impacts	~ 8- 10	~ $400,000	~ $800,000	~$1,200,000
Total Impacts	**~20- 26**	**~ $1,050,000**	**~ $3,450,000**	**~ $4,600,000**

Source: JEDI Wind. Note: Amounts rounded to the nearest hundred thousand dollars.

Land Lease Payments

Landowners who lease their property for the project will benefit from the guaranteed income stream the project provides. In addition, land owners who elect to have meteorological towers will receive additional payments. Payments made to participating land owners within the Madison County are projected to total approximately $500,000 to $750,000 each year over the life of the project. These landowner payments are measured as part of the indirect impacts associated with the project, and contribute toward the total local benefit as summarized above.

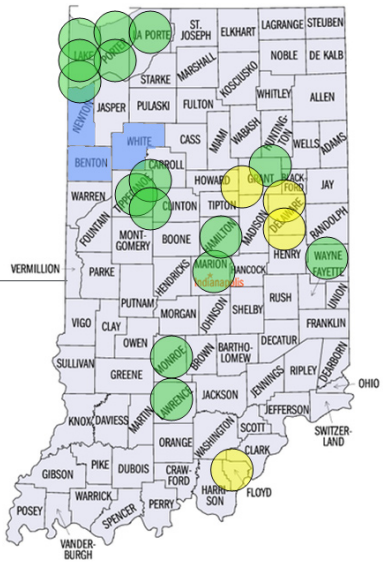
Property Tax Revenue

The construction of the proposed wind farm will result in an increase to Madison County's tax base by approximately $40-60 million. However, the anticipated property tax revenue is not presented as part of this summary.

WIND ENERGY FACTS: INDIANA

Indiana's impressive wind capacity additions have created economic development throughout the state

In 2009 and 2010, Indiana increased its installed wind capacity ten-fold, becoming one of the fastest growing states for wind power. New wind projects have supported new jobs and provided numerous economic benefits.

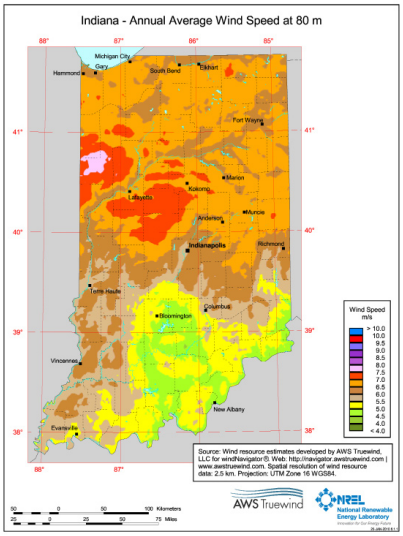


Blue counties have wind projects.
Green dots are online wind energy manufacturing facilities.
Yellow dots are announced wind energy manufacturing facilities.

Wind Projects

Currently online:	1,339 megawatts (MW)
Added in 2010:	303 MW
Added in 2009:	905 MW
Wind projects in queue:	8,426 MW

Indiana added the second most new wind power capacity of any state in 2009 and was the third fastest-growing state for wind power. Indiana is now ranked 12th for most installed wind power capacity in the country. Meadow Lake Wind Project in Indiana is the 6th largest project in the U.S.



Generation and Potential

Percentage of Indiana power provided by wind in 2010: 2.4%

Equivalent number of homes Indiana wind farms now power: 325,000

State wind resource: 148,228 MW (at 80 meters)

Indiana's wind resource is ranked 15th in the US and according to resource assessment from the National Renewable Energy Lab, Indiana's wind resource could provide over 400 percent of the state's current electricity needs.

Published May 2011 | Calculations based on national and state averages

FOR MORE INFORMATION, PLEASE CONTACT: windmail@awea.org

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AWEA AMERICAN WIND ENERGY ASSOCIATION

WIND ENERGY FACTS: INDIANA

Economic and Environmental Benefits

Investment in wind power is an investment in jobs, including jobs in operations and maintenance, construction, manufacturing and many support sectors. In addition, wind power projects produce lease payments for landowners and increase the tax base of communities.

- Total direct and indirect jobs supported in 2010: 1,000-2,000
- Annual property tax payments by wind project owners: $21 million
- Annual land lease payments: $4 million

Generating wind power creates no emissions and uses no water. The wind power installed in Indiana will avoid 2.3 million metric tons of carbon dioxide annually.

Wind Manufacturing Sector

Indiana has already attracted major investment from the wind sector. Brevini, a major gearbox manufacturer, is constructing its first American facility in Muncie, Indiana. The company is investing over $60 million in the state and will employ over 450 workers. In addition, many smaller Indiana companies have found a role in the wind energy supply chain, creating new green-collar jobs for Indiana workers. At least 14 Indiana facilities currently manufacture components for the wind energy industry and 4 new facilities are announced.

A wind turbine blade on a specialized rail car, on its way to an installation near Remington, IN
photo courtesy of CSX Transportation

Events

Companies from Indiana exhibiting at the WINDPOWER 2010 Exhibition: 23

FOR MORE INFORMATION, PLEASE CONTACT: windmail@awea.org

AMERICAN WIND ENERGY ASSOCIATION
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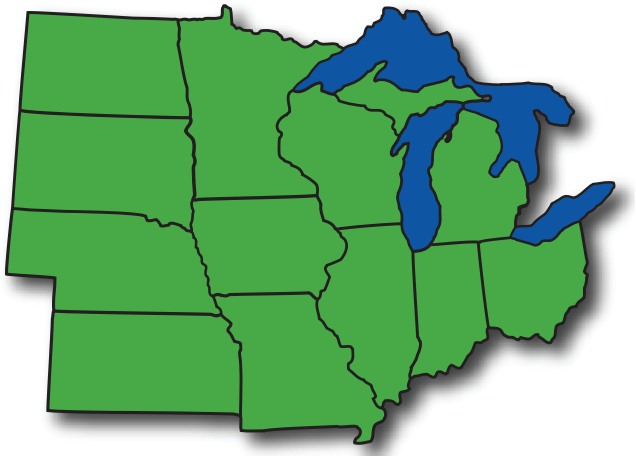
AWEA AMERICAN WIND ENERGY ASSOCIATION

Growing the Midwest's Green Economy

The boom in clean energy development, especially wind power, presents a tremendous opportunity for economic growth in the Midwest. This boom would create additional construction jobs, long-term operations and maintenance positions, and a positive indirect economic impact due to payroll spending, property tax revenue and land leases. Some of the best long-term economic opportunities will come directly from the manufacturing of wind turbine components.



As the wind industry continues to grow in the U.S., more wind turbine suppliers are creating jobs here. There are positive economic benefits to the region, and manufacturers also benefit through simplified construction logistics.

Modern wind turbines are enormous high-technology machines with towers close to 300 feet high, blades more than 200 feet long and rotors weighing as much as 100 tons. Manufacturing turbines in proximity to wind farms will be an important consideration because their size makes shipping them very expensive. With the help of more stable and supportive state and federal policies, more wind turbine suppliers are creating jobs in the places where wind energy development is taking place, especially the Midwest. This not only lowers costs but taps into the Midwest's tremendous manufacturing capabilities and skilled labor pool.

More importantly, existing Midwestern manufacturers that have supplied the automotive, machinery and electrical industries are generating new revenue and creating or retaining thousands more jobs by supplying the wind industry. Below is a sampling of companies across the Midwest that are participating in the wind industry supply chain:

Gears:

- Brad Foote Gear Works, Cicero, Illinois, 400 employees
- Winergy, Elgin, Illinois, 350 employees
- Merit Gear Corporation, Antigo, Wisconsin, 150 employees

Bearings:

- Timken, Cleveland, Ohio, 25,000 employees

Structural Towers:

- Tower Tech, Manitowoc, Wisconsin, 250 employees
- Trinity Industries, Clinton, Illinois, 150 employees
- DMI Industries, West Fargo, North Dakota

Turbine Assembly:

- Acciona, West Branch, Iowa 140 employees
- Clipper Windpower, Cedar Rapids, Iowa 100 employees

Blade Production:

- LM Glasfiber, Grand Forks, North Dakota, 800 employees
- Suzlon, Pipestone, Minnesota
- Siemens, Fort Madison, Iowa, 250 employees
- TPI Composites, Newton, Iowa, 500 employees
- MFS Composites, Aberdeen, South Dakota, 750 employees (anticipated by 2009)

Bringing More Wind Jobs to the Midwest

The United States' rapidly growing wind industry is poised for an even greater expansion in coming years. Renewable energy standards in more than 20 states ensure that utilities will purchase wind power for their customers. Wind turbines will continue to become bigger and more complex, making manufacturing in the Midwest even more important.

Attracting these manufacturers to states in the Midwest will take more than the right tax and economic development incentives. It will also take a political and business culture that is supportive of renewable energy development within the region, one that demonstrates that growing the green economy is a priority. Finally, Midwest states need to play a matchmaking role to link wind turbine suppliers with local businesses that can supply them.

How Can The Midwest Grow Its Wind Energy Supply Chain Activity?

Economic development organizations in several Midwest states (Michigan, Ohio, Iowa) have worked hard to both attract manufacturers and to bring turbine assembly companies and component suppliers together. The opportunities will only continue to grow.

While many companies are building their own relationships, state chambers of commerce and business organizations can play more active roles in opening doors to turbine manufacturers and educating component suppliers on opportunities in the wind energy industry.

ENVIRONMENTAL LAW & POLICY CENTER
Protecting the Midwest's Environment and Natural Heritage
www.elpc.org

Economic Benefits, Carbon Dioxide (CO_2) Emissions Reductions, and Water Conservation Benefits from 1,000 Megawatts (MW) of New Wind Power in Indiana

Wind power is one of the fastest-growing forms of new power generation in the United States. Industry growth in 2007 was an astounding 45%. New wind power installations constituted 35% of all new electric power installations. This growth is the result of many drivers, including increased economic competitiveness and favorable state policies such as Renewable Portfolio Standards. However, new wind power installations provide more than cost-competitive electricity. Wind power brings economic development to rural regions, reduces greenhouse gas production by displacing fossil fuels, and reduces water consumption in the electric power sector.

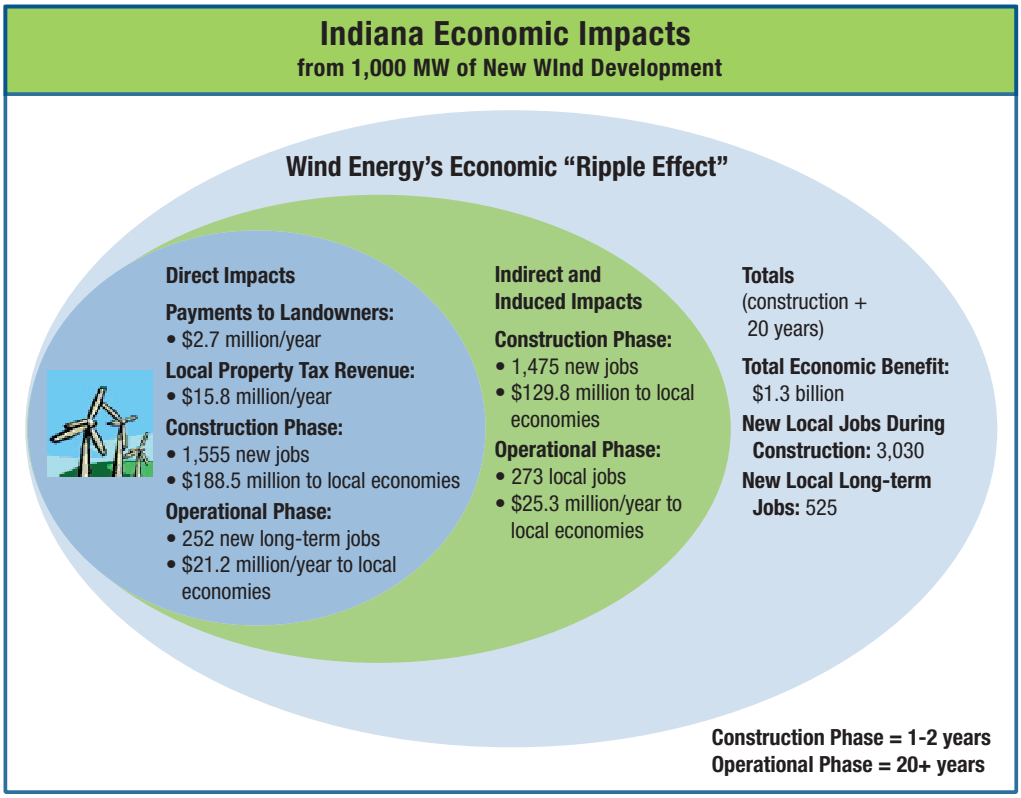
The U.S. Department of Energy's Wind Powering America Program is committed to educating state-level policymakers and other stakeholders about the economic, CO_2 emissions, and water conservation impacts of wind power. This analysis highlights the expected impacts of 1000 MW of wind power in Indiana. Although construction and operation of 1000 MW of wind power is a significant effort, six states have already reached the 1000-MW mark. We forecast the cumulative economic benefits from 1000 MW of development in Indiana to be $1.3 billion, annual CO_2 reductions are estimated at 3.1 million tons, and annual water savings are 1,684 million gallons.

Economic Benefits

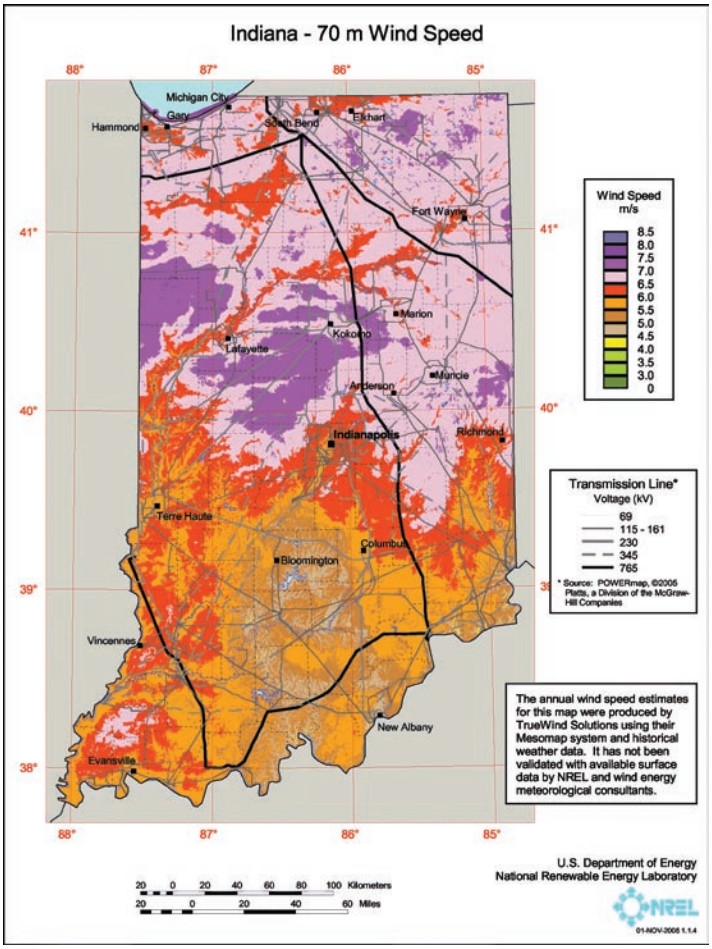
Building and operating 1000 MW of wind power requires a significant investment. But this investment will generate substantial direct, indirect, and induced economic benefits for Indiana. Direct benefits include jobs, land lease payments, and increased tax revenues. Indirect benefits include benefits to businesses that support the wind farm. Induced benefits result from additional spending on goods and services in the area surrounding the development.

Direct impacts result from investment in the planning, development, and operation of new wind facilities. Beneficiaries include landowners, construction workers, O&M staff, turbine manufacturers, and project managers. Indirect impacts reflect payments made to businesses that support the wind facility and include banks financing the project, component suppliers, and manufacturers of equipment used to install and maintain the facility. Induced benefits result from increased spending by direct and indirect beneficiaries. Examples include increased business to restaurants, retail establishments, and child care providers.

Drivers of economic benefits include the use of local construction companies, the presence of in-state component suppliers, local wage structures, local property tax structures, and operation and maintenance (O&M) expenditures. The projected benefits for Indiana could be greatly increased by developing a local wind supply, installation, and maintenance industry within the state.



Distribution of Wind Resources in Indiana



Methodology

The data for economic analysis are primarily from interviews with state-specific contacts, including developers, power plant operators, contractors, mining and gas associations, and state property tax assessors or administrators. When interviews were not possible, information was obtained from public Web resources, state tax reports, and federal databases for current power plants. Cumulative impacts are estimated for construction and 20 years of operations. Economic impacts are 2007 constant dollars and estimated by application of the National Renewable Energy Laboratory's (NREL's) Jobs and Economic Development Impacts (JEDI) model. Carbon estimates apply 2004 non-baseload CO_2 emissions rates (EPA eGRID2006 Version 2.1, April 2007). Water savings are calculated based on consumption rates for various generating technologies. Consumption rates were compiled by Western Resource Advocates and calculated from EIA form 767 data and EPRI publications. Consumption rates are applied to the NERC region generation mix as determined from EIA form 960/920 (2006).

Assumptions	
Construction Cost	$1,650/kW
Operations and Maintenance	$24.70/kW
Property Tax	$15,790/MW
Landowner Lease Payments	$2,667/MW/year

CO_2 Emissions Reduction and Water Conservation Benefits

In 2004, the average Indiana resident emitted approximately 21.5 tons of CO_2 as a result of electricity consumption. As a state, Indiana ranked 6th in electricity sector per capita CO_2 emissions. CO_2 emissions are increasingly important factors as state and federal governments consider policies regarding climate change while drought in the Southeast has underscored the relevance of freshwater supply issues outside of the arid and semi-arid regions of the United States.

Developing wind power in Indiana will result in CO_2 emissions reduction and water savings. Choosing to build wind projects results in CO_2 reductions from fewer new coal plants built and less natural gas consumption. In addition, both fossil- and nuclear-based electricity generation consume large amounts of water. Wind power reduces our reliance on increasingly vital freshwater resources.

Annual Impacts in Indiana from 1000 MW of New Wind Power	
Water Savings	CO_2 Savings
1,684 million gallons	3.1 million tons

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May 2008 • DOE/GO-102008-2562

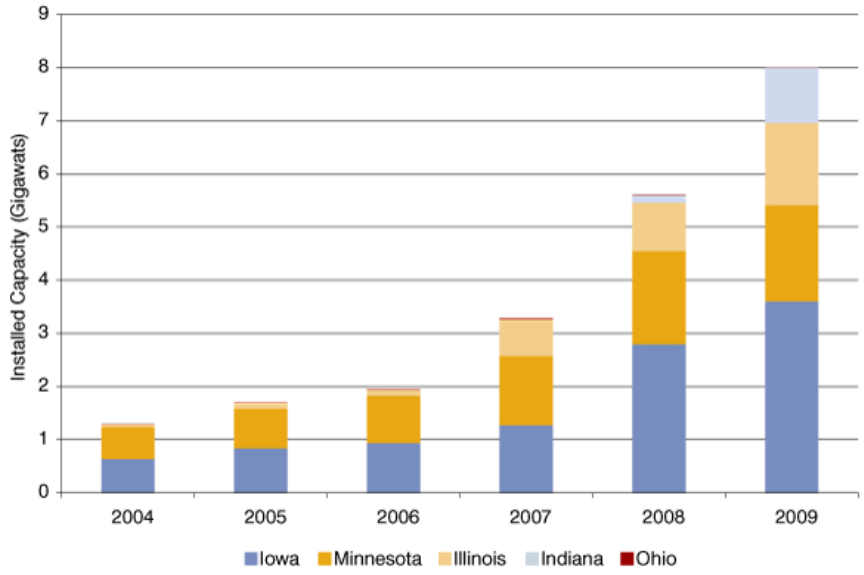
Who Builds Those Windmills?

The windmill has become a symbol of Indiana's move into the clean energy future. Many Hoosiers have gazed in awe at the expansive wind farms off of I-65 just north of Lafayette. But how much do we really know about wind energy in Indiana?

In the last several decades, wind energy has come a long way from the heavily subsidized Carter-era energy projects that eventually fizzled. Recently, thanks to technological developments making turbines more efficient, wind energy has taken off in the United States. Installed capacity for wind energy in the U.S. has increased at an average rate of 22 percent over the past five years.

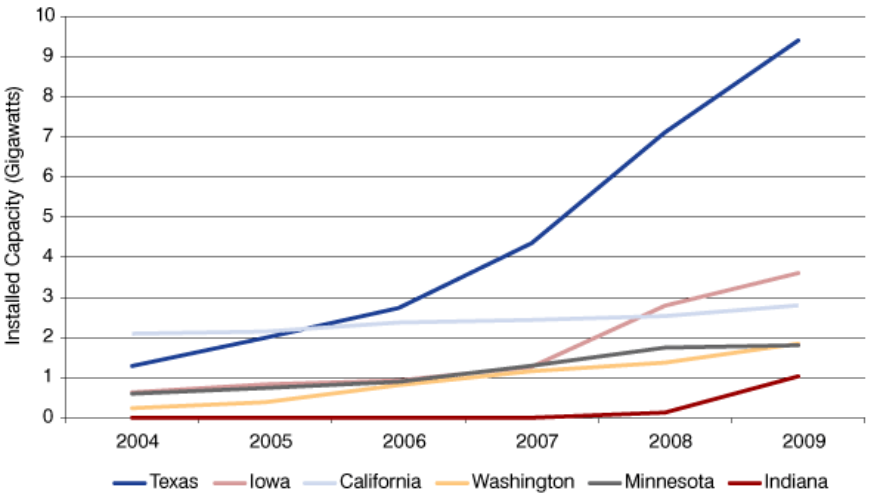
The Midwest has experienced similar growth in wind energy capacity. Iowa and Minnesota have led the expansion in the Midwest over the last five years, complemented more recently by Indiana (see **Figure 1**). As **Figure 2** shows, Iowa and Minnesota are two of the top five wind-producing states across the nation as a whole due largely to their favorable wind conditions.

Figure 1: Installed Capacity for Select Midwest States, 2004-2009



Source: U.S. Department of Energy

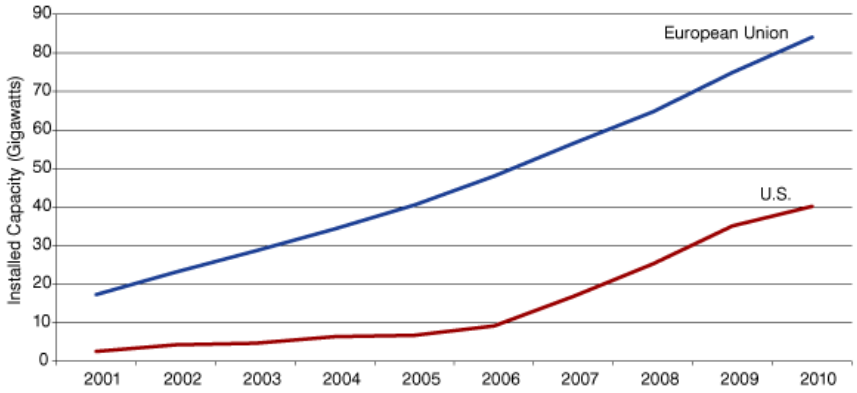
Figure 2: Wind Energy Production: Five Largest States and Indiana, 2004-2009



Source: U.S. Department of Energy

The U.S. has put up some impressive growth numbers, but it has a long way to go to equal the wind energy produced in the European Union (EU). As **Figure 3** shows, U.S. installed capacity is about half that of the EU. The EU derives about 3.5 percent of its energy from wind, compared to the U.S. at less than 1.5 percent. Considering that wind power is such a small share of electricity generation, the U.S. Department of Energy's goal to produce 20 percent of all America's electricity from renewable sources by 2030 is a daunting target. With that said, the U.S. wind energy sector is expanding rapidly, and Indiana and the greater Midwest not only stand to gain from wind as a source of energy, but also from windmill manufacturing as a source of economic growth.

Figure 3: Power Generation from Wind, 2001-2010



Source: Global Wind Energy Council

Indiana Wind Farms

Indiana is currently home to four industrial wind farms in Benton and White counties. Three are entirely European owned, while the Fowler Ridge wind farm is a joint venture between a West Virginian company and BP (see **Table 1**).

Table 1: Indiana's Wind Farms, November 2010

Wind Farm	Power Generating Capacity (Megawatts)	Number of Wind Turbines	Owner
Fowler Ridge	600	355	BP Alternative Energy (U.K.) and Dominion (West Virginia)
Hoosier Wind Project	106	53	Électricité de France
Meadow Lake Wind I,II & III	501.2	303	Energías de Portugal
Goodland Wind Plant I	131	87	BP Alternative Energy (U.K.)

Source: Indiana Office of Energy Development

The Department of Energy estimates that the construction of Indiana's wind farms employed around 2,000 people. Once operational, however, the employment figure declines to about 85 maintenance and repair workers.[1] Wind power generation is not going to create many jobs in the long term. However, wind turbine manufacturing does offer great potential for employment growth.

Turbine Manufacturing

Wind turbines consist of five components: the blades, the tower, the gearbox, the generator and the nacelle (which is the housing that surrounds the generator, gearbox and other electronic systems).

The blades and the towers do not travel well due to their size, and bridge clearances limit transportation options. As a result, blade and tower manufacturers prioritize the proximity of intended wind farms on the availability of transportation links when locating a plant.[2] However, occasionally the larger components will be imported. For example, 75 wind turbine blades (at lengths of nearly 54 yards a piece) were recently imported from Denmark via the Port of Indiana at Burns Harbor for Horizon Wind's new Timber

Road wind farm in Payne, Ohio.[3]

Manufacturing other windmill components also offers potential for economic growth and job creation in the Midwest if the predominantly European manufacturers shift production from Europe and Asia. There is already evidence that this is occurring: the past six years have seen European wind energy firms announce a total of $1.7 billion of foreign direct investment in the United States. The largest investor is Vestas Wind Systems, committing to spend over $1.3 billion, or more than 80 percent of total wind investment from European firms. Investments have primarily been in manufacturing (see **Table 2**).

Table 2: Manufacturing Investments over $50 Million by European Wind Energy Firms in the United States, 2004-2010

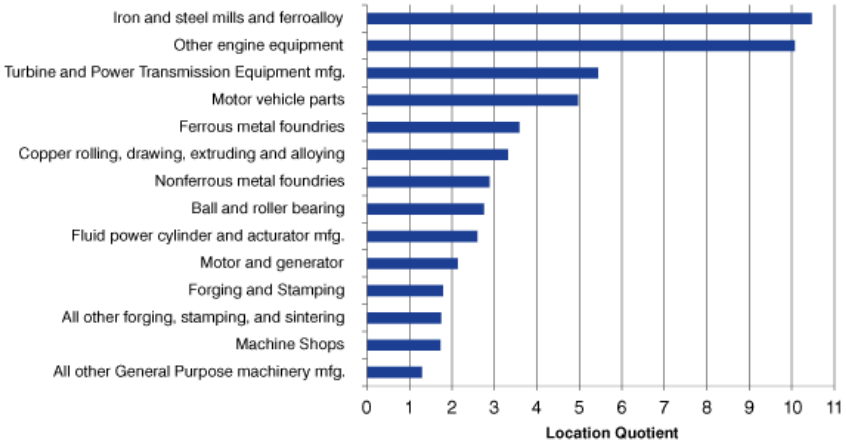
Company	Total Investment	Total Jobs	Origin Country	Destination	Year Announced
Vestas Wind Systems	$498,600,000	1,600	Denmark	Colorado	2010
Vestas Wind Systems	$240,000,000	550	Denmark	Colorado	2008
Siemens	$200,000,000	300	Germany	North Carolina	2004
Vestas Wind Systems	$180,000,000	650	Denmark	Colorado	2008
Vestas Wind Systems	$111,700,000	255	Denmark	Colorado	2008
Nordex	$100,000,000	700	Germany	Arkansas	2008
Vestas Wind Systems	$72,700,000	240	Denmark	Colorado	2010
Vestas Wind Systems	$61,500,000	400	Denmark	Colorado	2007

Source: FDI Markets

Many smaller windmill components are manufactured within the European Union and then exported to the United States. Brevini—one the largest manufacturers of speed changers, drivers and gears, all of which are regularly used in the construction of windmills—is bucking this trend with their investment in Indiana. In 2008, Brevini, an Italian company with U.S. operations headquartered in Indiana, announced that it intended to invest $86 million at its existing site just outside of Muncie. The construction funded by this investment is still ongoing and is expected to produce over 400 jobs when complete.

Researchers at Illinois State University have identified a variety of industries that contribute to wind turbine manufacturing, including machine shops, rolled steel manufacturers and electronics manufacturers. The Midwest, and Indiana in particular, has a particularly high concentration of iron and steel mills and other engine manufacturing firms, both of which are vital to the production of wind turbines. **Figure 4** demonstrates that there are high concentrations of employment in ductile iron castings and gearing and bearing manufacturing compared to the national average. (In this figure, a score of one represents an equal concentration to the national average.) As **Figure 4** indicates, the concentration of employment in iron and steel mills, as well as other engine manufacturers, in Indiana is more than 10 times the U.S. concentration. If recent trends continue and the U.S. makes progress toward the goal of deriving 20 percent of its power from renewable energy by 2030, the demand for wind turbines and the workers who build them is sure to increase in the next two decades.

Figure 4: Location Quotients for Select Indiana Manufacturing Industries, 2010



Source: Bureau of Labor Statistics

There is also an opportunity for homegrown wind energy start-ups to enter this market. Firms like Vela Gear Systems, located in Carmel, Ind., or Renewegy in Oshkosh, Wis., have both successfully established themselves as manufacturers of components specific to the wind power industry. Vela is expecting rapid expansion over the next three years and, thanks in large part to tax credits from the Department of Energy, may grow from one full-time and six part-time employees to more than 160 by 2014. These new firms are not in direct competition with the European manufacturers and instead tend to focus on installations for individual firms or smaller scale wind generation. Nevertheless, start-ups in the Midwest are emerging and finding their niche in this expanding sector.

Wind Turbine Occupations

The wind turbine industries that are relatively concentrated in Indiana employ a variety of production occupations. The iron and steel milling industry, for example, employs many assemblers and fabricators as well as installation, maintenance and repair workers. The turbine and power transmission and other engine manufacturing industries hire assemblers, fabricators, metal and plastic workers in addition to mechanical and electrical engineers, engineering technicians, and drafters. Based on just the top three industries that both supply windmill components and in which Indiana (and the Midwest) have relative strengths, it appears that the industries supplying windmill components hire across a wide range of educational and skill requirements.

Conclusion

Wind generates just a sliver of the power consumed by Americans, but it is expected to grow rapidly over the next 20 years. The EU is the world leader in wind energy, boasting some of the world's largest wind power companies, including Siemens, Nordex and Vestas. Midwestern firms entering the windmill or component market will face stiff competition from these companies. Nevertheless, as these EU firms seek to improve the proximity of their operations to the point of installation, Midwestern firms will likely see growing opportunities to carve out their slice of America's wind power industry.

Notes

1. National Renewable Energy Laboratory, *NREL's Wind Powering America Team Helps Indiana Develop Wind Resources* (Golde, CO: NREL, 2010).
2. Andrew S. David, *Wind Turbines Industry and Trade Summary* (Washington D.C.: United States International Trade Commission, 2009).
3. Diane Krieger Spivak, "First Ship en Route to Burns Harbor Port with 75 Wind Turbine Blades, "*Post-Tribune*, **www.indianaeconomicdigest.net/main.asp?SectionID=31&SubSectionID=306&ArticleID=59106.**

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